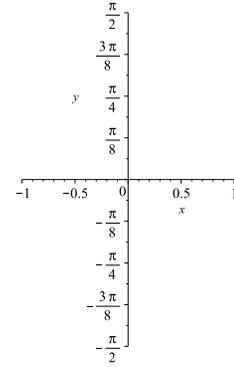
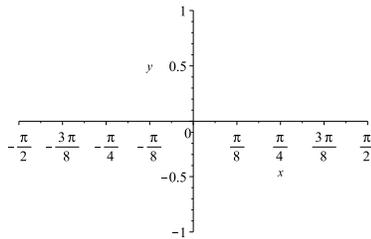
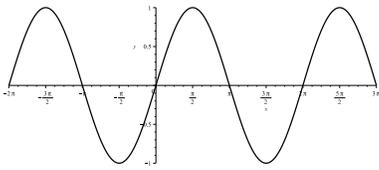


Given the graph of $f(x) = \sin x$, is it one-to-one?



By definition of inverse functions:

for $y \in$

i.e. $\sin^{-1} x$ returns the number between $-\frac{\pi}{2}$ and $\frac{\pi}{2}$ whose sine is x .

Ex $\sin^{-1} \left(-\frac{\sqrt{3}}{2} \right) =$ NOT

Ex $\arcsin \left(\tan \frac{\pi}{4} \right) =$

CANCELLATION EQUATIONS

$\sin^{-1}(\sin x) = x$ if

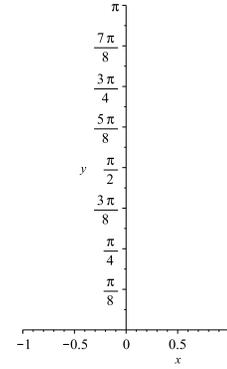
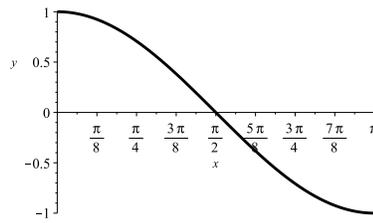
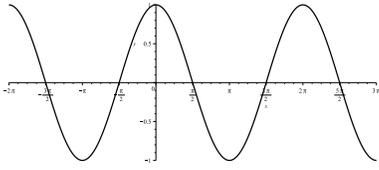
$\sin(\sin^{-1} x) = x$ if

Ex $\sin^{-1} \left(\sin \frac{\pi}{4} \right) =$ OR $\sin^{-1} \left(\sin \frac{\pi}{4} \right) =$

Ex $\sin^{-1} \left(\sin \frac{5\pi}{4} \right) \neq$ BUT $\sin^{-1} \left(\sin \frac{5\pi}{4} \right) =$

Ex $\sin \left(\sin^{-1} \frac{1}{2} \right) =$ OR $\sin \left(\sin^{-1} \frac{1}{2} \right) =$

Similarly for $f(x) = \cos x$, restrict the domain to



Domain:
Range:

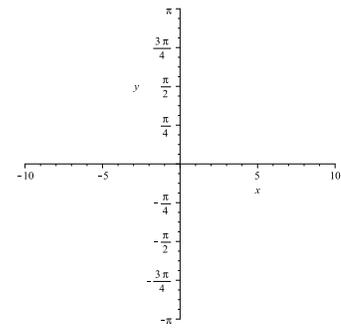
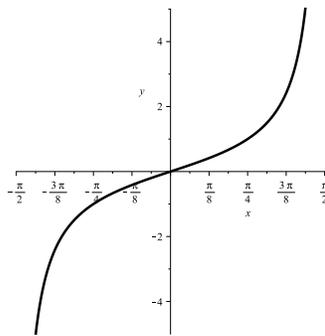
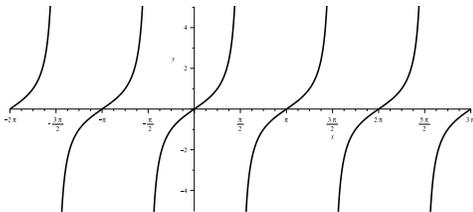
CANCELLATION EQUATIONS

$\cos^{-1}(\cos x) = x$ if

$\cos(\cos^{-1} x) = x$ if $-1 \leq x \leq 1$

PROPERTIES OF INVERSES

Similarly for $f(x) = \tan x$, restrict the domain to



Domain:
Range:

CANCELLATION EQUATIONS

$\tan^{-1}(\tan x) = x$ if

$\tan(\tan^{-1} x) = x$ if $-\infty \leq x \leq \infty$

PROPERTIES OF INVERSES

[See book for graphs of $\sec^{-1}(x)$, $\csc^{-1}(x)$, and $\cot^{-1}(x)$]